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AIR CORPS NEWS LETTER

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The chief purpose of this publication is to distribute information on aeronautics to the flying personnel in the Regular Army, Reserve Corps, National Guard, and others connected with aviation.

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THE ARMY INDUSTRIAL COLLEGE

By Major Richard H. Magee, Air Corps*

ONE sentence in Major Ira C. Eaker's excellent article on the Command and General Staff School (July 15th issue of the Air Corps News Letter) impressed me very much, viz: "Should an Air Corps officer take the course at the Command and General Staff School or should he go to the Industrial War College?"

This question cannot be answered categorically; I believe selected officers of the Air Corps should attend both schools in order to attain a balanced and broad military education better to fit them for ultimate duty with the War Department General Staff. However, this is the age of specialization, and each Air Corps officer should determine early in his career the line of specialized work for which he is best fitted. If he has demonstrated special aptitude for supply and procurement work, he should unquestionably attend the Army Industrial College, and he should attend shortly after he has completed ten years' service, in order that he may have a maximum period of time to apply this knowledge for the benefit of the Air Corps.

Success in an emergency depends as much on materiel as on military strategy, and this fact is recognized not only by our own nation but by all the first class nations of the world. Success in modern war is only assured by the fullest use of the country's economic resources.

In passing, I would strongly recommend that each Air Corps officer diligently study "The Industrial Mobilization Plan of the United States," Revised Edition, 1936. A copy of this work should be available in the library of every Air Corps post. It can also be obtained from the Superintendent of Documents, Government Printing Officer, Washington, D.C. The study of this book will be an education in itself, and will be not only instructive but interesting.

The Army Industrial College was created in 1924 by the Assistant Secretary of War partly to carry out the statutory provisions of the National Defense Act. The mission of the College is fully and tersely stated in A.R. 350-5, and is "to train officers with a view to insuring

(a) Adequate knowledge of war-time needs in industrial organization and mobilization of materiel.

(b) Understanding of the technique of supervising war-time procurement of military supplies.

(c) Proper training for duty in the office of the Assistant Secretary of War."

In carrying out the above mission, close contact is maintained with the Planning Branch, Office of the Assistant Secretary of War; the Supply Arms and Services; the Navy Department, and the General Staff and other government agencies and departments. Outstanding lecturers in the economic and industrial fields present their views on economic and industrial problems.

The course itself consists of lectures, conferences, individual and committee problems. A brief resume of the course is listed below, in order that officers of the Air Corps may be fully informed as to the scope of the School.

Problem No. 1 - "The Fundamentals of Business" - is an individual problem and acquaints the student with the economic principles underlying the conduct of business operations. Economics, Statistics, Finance and Accounting, and Industrial Problems are studied during this problem, which requires 7-2/3 weeks.

Problem No. 2 - "Basic Industries" - consists of a committee study of ten of the basic industries of the nation, and is designed to give the student a general idea of the organization, operating methods and managerial problems of an important cross section of American industry. A resume of each committee's work is presented to the class as a whole at the conclusion of the problem, which requires three weeks to complete.

Problem No. 3 consists of an individual historical study of the procurement and industrial mobilization in the United States during the World War, paying particular attention to the Purchase, Storage and Traffic Division and emergency governmental agencies created during that period. This study requires three weeks.

Problem No. 4 - "War and Navy Department Organization and Procurement" - is a study of the organization of the War and Navy Departments and their coordinating agencies, with particular attention to their methods of procurement. It is

*Graduate, Army Industrial College, 1937.

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partly an individual study and partly a committee study. Current procurement policies of the students' own arm or service are studied during the 2½ weeks required for this problem.

The above problems are introductory studies and prepare the student for the later problems of war procurement and economic mobilization.

The remainder of the course is divided into two broad fields. The first field, that of war procurement, consists of planning in time of peace for procurement in war, and the operation of the system in war as far as it pertains to the War and Navy Departments. This field is covered generally by problems Nos. 5 to 16, requiring 3½ weeks to complete. These are committee problems and consist of studies of:

5. War Plans.
6. Industrial War Load and Allocations.
7. Utilization of Automotive Industry.
8. Procurement Districts and Corps Area Procurement.
9. Inspection of Materials.
10. Personnel for Procurement.
11. War Contract Procedure and Policies.
12. Early Production and Improvization.
13. Construction in War.
14. Ships and Shipping.
15. Strategic and Critical Materials.
16. Control of Procurement.

Problems 5 to 16 cover special studies in coordinate fields related to the general subject of war procurement. They do not by any means, however, cover the entire field of war procurement. Presentations at the end of the study acquaint the entire class of the different committees' work.

Problem No. 17 - "Test of Protective Mobilization Plan" - is an analysis of the War Department Mobilization Plan, to determine how well stocks on hand and estimated production will meet procurement requirements of that plan. Most of the work on this problem will be by committees, with a presentation given to the class at the end of the problem. A period of 2½ weeks is spent on this phase of the course.

Problem No. 18 - "War Procurement" - is an individual problem lasting four weeks, in which each student makes a study of the planned war procurement system as a whole, and a determination of the problems involved in obtaining the munitions required in a major emergency, with an analysis of the peace-time planning methods and the proposed war-time management of the War and Navy Departments' procurement programs. Special situations are discussed in conference to test the students' knowledge.

Problem No. 19 - "Government" - furnishes the student with a knowledge of the current functions and potential war-time functions of the regular departments and selected executive agencies of the government, and covers a period of 2½ weeks.

The second field of study is one of Industrial and Economic Mobilization. Committee problems, Nos. 20 to 31, inclusive, cover in part the field of planning for, and executing war-time control of the economic resources of the nation. Studies are made of -

War Powers of the President and Congress.
Industrial Mobilization Plans.
Transition from Peace to War.
Licensing of Industry.
Public Relations.
Trade Organization and Regimentation.
Budgetary Control.
Control of Iron and Steel.
Neutrality.
War Trade.
Economic Analysis of Selected Nations.
Study of Control of Economic Resources of Selected Nations.

Presentation by committees to the class is made after 3½ weeks' study.

Problem No. 32 - "Industrial Staff Memoranda" - consists of individual studies of pertinent problems related to procurement planning and planning for industrial mobilization, and requires one week's work.

Problems Nos. 33 to 44, inclusive, cover special studies in coordinate fields relating to Industrial and Economic Mobilization, which studies require 3½ weeks and, as usual, presentations are given the class as a whole upon the completion of the allotted work.

These problems consist of -

War Finance.
War Labor.
Communications.
Transportation.
Power and Fuel.
Strategical Industrial Areas.
Economic Planning in case of loss of certain industrial areas.
Priorities.
Price Profit and Production Control.
Economic Readjustment following an Emergency.
Study of National Economy of Selected Nations.

The final written problem is No. 45 - "The Utilization of War Resources of the Nation." This may properly be termed the students' thesis, and covers a summation of the problems of industrial mobilization for war, together with recommendations as to the measures to be taken to insure their successful solution. The entire second field of study prepares the student for this problem, wherein the student is given full opportunity to present his views as to the method that should be adopted for the most effective use of the nation's economic resources in war. A period of 3½ weeks is spent on this highly worthwhile phase of the course.

The course is completed with a one week's war game, in which the principles

of War Procurement and Mobilization of Economic Resources are applied to a definite situation.

Inspection trips are made to selected industrial plants and Army and Navy installations throughout the year. However, the most interesting and instructive trip is made to the Pittsburgh industrial area during June, just prior to graduation. Approximately four days are spent visiting -

Jones and Laughlin Steel Corporation,
Westinghouse Company,
Mesta Machine Company,
Mine Safety Appliance,
Pittsburgh Plate Glass, and the
Aluminum Company's new Kensington plant.

In this short paper it is impossible to enumerate the many interesting phases of work at the College. The course is highly instructive, interesting and worthwhile. It should be the ambition of every Air Corps officer to take advantage of the opportunity to complete the course at the Army Industrial College.

In closing, a quotation from the remarks of the Director, Colonel Harry B. Jordan, Ordnance Department, delivered during the Orientation talk last September, will do more to paint a true picture of the Aims and Policies of the College than anything else I can add, viz:

"In general, instruction here is self-instruction. There are no approved solutions or approved textbooks. You will do your own thinking and arrive at your own conclusions. When we are engaged upon some specific assignments in the service we all know that we must carry out loyally and cheerfully the policies of higher authority regardless of whether we agree with those policies or not. But this is a college and a graduate college at that; and if any officer has something on his mind that he thinks is good for the National Defense, he can present it 'without fear, partiality, favor or affection.' There are no restrictions on this whatever, except those manifest in any assemblage of gentlemen, viz: adherence to the subject; courtesy; constructive intent; and, in our conferences, parliamentary decorum."

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The Advanced Flying School, Kelly Field, Texas, gained nine additional Attack planes on August 2nd. Six were ferried from Barksdale Field by Colonel E.A. Lohman, Lieuts. Marshall Bonner, B.V.G. Scott, R.W. Osburn, E.F.Cullerton and W.D. Griffith. These officers were ferried to Barksdale Field in B-6's by Lieuts. Densford and Epler. On the same date Lieut. R.D. Butler ferried Colonel A.N. Krogstad, Majors R.N. Ott and C.C. Nutt to Maxwell Field in a C-14 where they picked up three A-12's. These planes will be used to augment the equipment of the Attack Section of the A.F.S.

NEW AIR FIGHTERS AT SELFRIDGE FIELD

Army Air Corps pilots of the GHQ Air Force at Selfridge Field, Mich., are conducting extensive tests on two brand new aerial fighting airplanes, the performance of which eclipses by far anything heretofore experienced in America.

The first of these Pursuit planes to be received, the XP-36, manufactured by the Curtiss Aeroplane Company, has already been judged valuable to the extent of an order by the War Department for 210 of its type for GHQ Air Force units; and the second, the P-35, manufactured by the Seversky Aircraft Corporation at Farmingdale, Long Island, is the forerunner of 77 like airplanes already being manufactured for the three squadrons now at Selfridge Field. These three squadrons are now equipped with the Boeing P-26 which, though badly outclassed by its brothers, was in itself a short three years ago a revolutionary design. Upon arrival of the new aircraft, it is expected that the planes now in use will be transferred to Army flying schools, other Pursuit units, or to forces in Hawaii and the Panama Canal Zone.

Both of the new fighters are single-seater low-wing monoplanes, and of much the same general appearance. Each is equipped with retractable landing gear, landing flaps, and very powerful twin-row radial engine. The familiar blue-and-yellow of the planes of the Army Air Corps is missing, as both are finished in the aluminum sheen of unpainted metal.

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NEW COMMANDING OFFICER FOR BROOKS FIELD

Major Douglas Johnston, Air Corps, recently took over the duties of Commanding Officer of Brooks Field, Texas, succeeding Lieut. Colonel Henry J.F.Miller, Air Corps, now in command of the San Antonio Air Depot, Duncan Field, Texas.

At a formation of the troops of Brooks Field, Colonel Miller formally bade the men farewell and relinquished the command to Major Johnston. The Colonel was presented the Army League football trophy, won by the Brooks team in the season just past, as a token of remembrance and thanks for his interest in sports while he was Commanding Officer.

Prior to taking over the command of the field, Major Johnston was Executive Officer of the post, and has been at Brooks Field since September 24, 1935. He is a graduate of the Air Service Balloon and Airship School, class of 1924. He completed the Advanced Course at the Coast Artillery School in 1928, and the Field Officers' Course at the Chemical Warfare School in 1936. In 1929, he graduated from the Air Corps Tactical School. He holds the flying ratings of Airship Pilot, Balloon Observer and Airplane Observer.

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NEW FIRING METHODS BY PURSUIT

During the period from July 1st to 25th, last, while the 94th Pursuit Squadron, stationed at Selfridge Field, Mich., was occupying the Aerial Gunnery Range at Camp Skeel, Oscoda, Mich., the traditional method of aerial gunnery practice by Pursuit pilots was suddenly amended to include practice in mass firing on ground targets in units of three, six and twelve aircraft, all firing simultaneously. After two weeks of practice in the new method of air firing, pilots of the 94th Squadron were called upon to demonstrate this method to the Commander of the Second Wing, Brigadier General Gerald C. Brant, during his inspection of the 3rd Air Base, July 29-30.

This mass firing was performed from the tactical air formation developed at Selfridge Field during the past two years, that is, the firing was actually done with each flight of six P-26 Pursuit planes flying in elements of two ships each, with elements staggered to the rear alternately to left and right of the leading element.

This formation parallels a system of formation flying and aerial gunnery developed at Langley Field in the past several years, which is known colloquially as the "string" formation. The News Letter Correspondent believes that studies are being made by high command as to the relative effectiveness of the two differing systems of Pursuit mass firing.

The statement of the Acting Squadron Commander, 1st Lieut. Paul B. Wurtsmith, covering the period of change in gunnery methods, is as follows:

"Work began promptly on Tuesday, July 6, 1937, after the Fourth of July holidays. Pilots were up and ready to fire at 5:00 each morning. We fired right through each day until 9:00 a.m., when the air started getting too rough to fire. Some of the older pilots who had fired the course previously, started right off with a high percentage of hits, sometimes making the maximum number. The younger pilots who had never fired before were quite puzzled for a few days because they were not getting so many hits, but they soon caught on and were picking up rapidly. The attached pilots started off making such good scores that they immediately commenced their record fire. The three of them had practically finished the course when Captain Dawson went on leave and 1st Lieut. Wurtsmith assumed command.

"The next change was an order from the Group Commander, directing that all individual firing cease at once, except those shooting record, and that emphasis be placed on Mass Firing by flights and by squadron. This order, received on July 13th, caused quite a change in the whole set-up. Those firing record, the three attached pilots, were rushed through the course - however, they came out with excellent scores. The range detail rapidly started work on the new 12 by 60-foot target for mass firing. Within three days our new range had been set up, all guns were bore-sighted at 1500 feet, and sufficient individual long range practice phases had been carried out to warrant the beginning of flight firing. Our time in camp had been extended from July 21st to the 25th, to allow sufficient time for try runs to train those pilots who had never fired in formation.

The 94th two-ship element formation was used and tested exclusively to a great advantage. Theflights started right off getting a high percentage of hits, much sooner than was expected. The two flights ran neck and neck for high score - the average of both flights being about 37% hits per number of rounds fired. Sometimes a flight would shoot as high as 43% hits. This flight practice was carried out for a couple of days, and then squadron practice began. Not much difference in firing was noted, except more care and precision had to be executed in formation work. The squadron did exceptionally well in this phase.

On the whole, the new type gunnery training was very enjoyable and successful at Oscoda. Both the men and officers showed a mighty fine spirit throughout the entire course. Swimming, boating, fishing, tennis and ball playing were the major sports enjoyed by everyone. The fishing stories are by far too numerous and erratic to relate. However, on July 24th the whole command returned to Selfridge Field with the feeling of a job well done."

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FISH STORIES FROM ALBROOK FIELD

"Fishing has been extremely good around the Pearlas Islands for the last six weeks," says the News Letter Correspondent, "and all of Albrook's intrepid fishermen have been having their day.

Recently a party, including Major General David L. Stone, Commanding General of the Panama Canal Department; Brigadier General George H. Brett, our own Commanding General; Colonel W.B. Meister; Major W.H. Styer and Captain F.N. Leakey spent several enjoyable days in the Pearlas Islands group and had real fisherman's luck. After the party had hooked several 100-lb. sailfish, General Stone had the thrill of a fisherman's lifetime when he hooked a 250-lb. marlin. After a two-hour battle, the game fish was finally brought to gaff. At this point, while perched precariously on the rail to take a candid shot with his camera, General Brett lost his

(Continued on Page 5).

COMMENCEMENT EXERCISES OF AIR CORPS ENGINEERING SCHOOL

THE annual commencement exercises of the Air Corps Engineering School were held at the Wright Field Auditorium at 11:00 a.m., July 30th. This was the seventeenth commencement of the organization, and ten student officers received certificates of graduation. The usual brief ceremony marked the occasion.

Brigadier General A.W. Robins, Chief of the Air Corps Materiel Division, and Commandant of the Engineering School, delivered the only address and distributed the certificates to the graduates.

General Robins pointed out that the Air Corps Engineering School is the smallest in number of students of any of the Air Corps schools. As a result, student officers for this School were among the most carefully selected groups in the Air Corps. Records of all applicants were examined, and only those believed to be especially adapted to the engineering work were given consideration. Under this condition, there is small question as to the ability of the student to pass the examinations, as all are bound to come out well. In the present class the grades were found to be high, with a very small range between the various students. Leaders of the class, therefore, are privileged to feel especially proud of their records. Each officer graduates with the rating of Aeronautical Engineer.

"Nowadays," said General Robins, "there is some question as to just what the term engineer includes, as in a broad sense it might be applied to almost every trade or profession. It is well for the modern aeronautical engineer to be a specialist in some line. He must not allow his viewpoint to become narrowed for that reason, but should maintain a broad interest in all the branches of aeronautics.

As to the future of aviation, there is no question. If the advance is as rapid in the next ten years as it has been in the last five, we may even be flying to the moon. The role of aeronautical engineer, therefore, is becoming more and more important. Formerly, the 'hot pilot' was the person most in demand, especially in the tactical units. The present needs of the tactical units, however, include a knowledge of radio, of mechanisms, and of structures.

In the present class, the majority of the officers are receiving assignments at the Materiel Division. These officers are peculiarly fortunate in that they have an opportunity to fly the most advanced equipment received by the Air Corps."

In concluding his remarks, General Robins congratulated the wives of the graduates, giving them credit for the excellent grades received by their husbands in this course. "No officer could achieve such grades," said General Robins, "with a wife who was continually nagging him or finding it necessary to be perpetually amused." He warned the officers to regard their graduation as a beginning rather than as the end of learning, as experience must be added to study for complete success.

Of the ten Air Corps officers who graduated from the Engineering School, six were assigned to duty at the Materiel Division, viz: Lieuts. E.H. Beebe, H.G. Bunker and L.E. Massie with the Aircraft Branch; Captain J.G. Moore with the Engineering Section, Lieut. S.O. Redetzke with the Power Plant Branch, and Lieut. H.H. Tellman with the Equipment Branch.

Captain R.E. Culbertson was assigned to the Fairfield Air Depot and Lieut. T.B. McDonald to the San Antonio Air Depot.

Lieuts. D.J. Keirn and Donald L. Putt have another year of study ahead of them on the subject of Aeronautical Engineering, the former being under orders to pursue the course of instruction at the University of Michigan and the latter at the California Institute of Technology at Pasadena.

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Fish Stories from Albrook Field

(Continued from Page 4.).

balance and in he fell. Being quickly hauled out of the shark-infested water, General Brett was none the worse for wear save being drenched from head to foot. Other fishermen who have been having the time of their lives are Lieut. Goodrich, from France Field, who with a 150-lb. sailfish to his credit has the record catch of the season; Lieut. Edgar Sirmyer, who also marked up his first sailfish, and Lieuts. Algert and Long, who have been giving the Tarpon at Madden Dam an awful run for their money."

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ANOTHER RESERVE PILOT JOINS PAN-AMERICAN

Albrook Field, Panama Canal Zone, lost one of its popular young bachelor Reserve officers recently when Lieut. Allen Sewart accepted a position with Pan-American Airways.

"While on a recent flight," says the News Letter Correspondent, "we saw Sewart busy at work in Brownsville and enjoying his new position very much. We hate to lose him, but wish him the best of luck in his new position."

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NEW SCIENTIFIC KNOWLEDGE ON THE SUN

An announcement made several days ago by Harvard University reveals a new discovery by Major Albert W. Stevens, Air Corps, as member of the Hayden Planetarium-Grace Eclipse Expedition. At a conference of astronomers at Harvard University disclosure was made of the first definite proof that the solar corona is not made up chiefly of flaming coronal streamers alone, as has been supposed, but is an even, globular blanket covering the sun more than a million miles deep.

Photographs leading to this finding were taken from an airplane in the substratosphere off the coast of Peru during the eclipse of the sun on June 8th, last, under the direction of Major Stevens.

All of Major Stevens' plates clearly show a perfectly even corona surrounding the sun, at a depth considerably greater than the diameter of the body. His photographs include eleven pictures with a 24-inch camera, four pictures with an 8¼-inch camera, and 150 feet of motion picture film made with a 6-inch lens.

The usual familiar coronal streamers, which have completely dominated eclipse photographs taken from the ground, and which have absorbed most of the scientific attention up to now, appear on the new plates as relatively insignificant bright tracery in the immense globular envelope.

While the great altitude of 25,000 feet at which Major Stevens worked made his observations very difficult from the point of physical discomfort, it was largely because of this height that he made his finding, according to Dr. Harlow Shapley, of the Harvard Observatory. In the substratosphere he had the advantage of being above about two-thirds of the earth's atmosphere, where dust particles and air molecules give relatively small trouble in photographing difficult subjects like the solar corona.

It is probable that the finding will affect the traditional method of eclipse observations, leading astronomers to make more use of airplanes to carry their instruments up into the substratosphere. Further analysis of the structure of the globular corona must wait until the next favorable eclipse in 1940 over South America and South Africa, when scientists can study the phenomenon through ultra-violet lens systems and the spectroscope.

Dr. Donald H. Menzel, Harvard's authority on solar phonomena, and leader of the Harvard-Massachusetts Institute of Technology eclipse expedition to Siberia last year, voiced the belief of the conference that Major Stevens' finding is "of great importance and will have an immediate bearing on the interpretation of the structure of the Sun's upper atmosphere."

Guided by their knowledge of the globular corona, the astronomers checked back and found that the phenomena was recorded on the Harvard totality photographs of last year, although by no means as clearly as on the substratosphere photographs. Earlier indications of the globular form of the corona has been obtained by the European astronomers Bergstrand and von Klueber, but the full appreciation of the nature of the corona was not reached until Major Stevens' photographs brought out the phenomenon more clearly than heretofore.

A possibility that the spectacular appearance on Major Stevens' plates was caused by photographic or optical defects or by the action of minute ice particles in the stratosphere has been ruled out by rigid tests at the Eastman Kodak Company and the Institute of Optics of the University of Rochester, N.Y.

Reports of examinations of the Stevens negatives were presented to the Harvard conference by Dr. Kenneth Mees and Dr. Walter Clark, of the Eastman laboratories, and by Dr. Brian O'Brien, of the Institute of Optics, a summer lecturer at Harvard. Their experiments were accepted as conclusive that Major Stevens had photographed a natural phenomenon. The astronomers considering the evidence numbered fifty scientists from a dozen different American observatories.

Major Stevens flew to Harvard last week from Wright Field, Dayton, Ohio, where he is stationed, to confer with the astronomers, assembled there for the annual summer "hollow square" discussions sponsored by the Observatory.

Harvard scientists commented on the fact that two of the most significant observations of the 1937 eclipse were the work of amateur astronomers. Their reference was to Major Stevens, who is one of the Army's best known experts in stratosphere flight and aerial photography; and to Sr. Fernando de Romana, a Peruvian amateur astronomer, who utilized Harvard equipment in June to obtain the best photographs of the corona ever made in polarized light.

As a highlight of the scientific announcement, the astronomers pointed out that Major Stevens' important results were unexpected and essentially accidental. As one of the many field workers in the Hayden Planetarium-Grace Expedition, directed by Dr. Clyde Fisher, of the Hayden Planetarium, N.Y., Major Stevens was primarily interested in

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"AND I LEARNED ABOUT FLYING FROM THAT."

THE "deadly tailspin," cause of many training crashes and deaths during the feverish training for flying over the lines during the World War days is still with us. Sired by Old Man Gravity out of Stall, conception and gestation are remarkably brief, and the malignant Imp is born with almost no warning of impending labor.

Thus it was over Gelax, Virginia, on July 6, 1937, in one of the GHQ Air Force's newest YB-17's. On this occasion the flier's best friends, Altitude, Presence of Mind and Skill robbed the Imp of its evil intent, and the incident passed off with one successful parachute jump, a few bruises, some relieved feelings and numerous valuable lessons.

On the day in question, one of the YB-17's procured for servide test and piloted by 1st Lieut. William C.Bentley, Air Corps, was securing performance data at 14,000 feet, under conditions of high loading and low speed. The airplane was flying above an overcast and through broken clouds on the automatic pilot when suddenly, with no warning whatsoever, the airplane did a snap half roll to the left and continued into a left spin. During the half roll, Lieut. Bentley turned off the automatic pilot and took the controls. The wheel and rudder were both in the full right position, showing that the automatic pilot had reacted to the roll and was endeavoring to level off the airplane.

Let us continue with the words of various members of the crew. Lieut. Bentley states:

"The throttles were immediately closed and after an estimated turn and a half spin, level flight was resumed by utilizing turn and bank indicator, airspeed, rate of climb and altimeter. The gyro flight instrument was out, having hit the limiting pegs. Level flight was resumed at 11,000 feet and held for a few minutes until an open spot was encountered and, in this, the ship was tested for stability, flying qualities, etc. The airplane handled normally in every respect from 90 MPH to 140 MPH, and the gyro pilot was found to function perfectly."

Captain McDaniel states:

"On the flight described, I was seated in the co-pilot's seat performing the duties assigned to the co-pilot. Just prior to the spin there was no loss of altitude, no change in the airspeed, no indication of 'mush' on any of the instruments or by feel, no vibration, or indication of motors laboring, no airplane or control or wing flutter and no indication or warning of any kind of an approaching stall. The plane simply started a rapid bank and then turned to the left without the nose dropping first and continued on into the left spin. As the wings approached vertical, the nose started down and continued to fall at such a rate as to prevent my being thrown against the safety belt. At no time did I feel any pressure on the belt. I did nothing to the controls until the pilot had closed the throttle and then I changed the propellers to high pitch, to help prevent racing the motors. The controls responded perfectly and smoothly and without delay when the pilot applied them to stop the spin, and the pull out of the dive was very smooth and gradual so that there was practically no 'heavy' feeling or very little tendency to be pushed deeper into the seat. Nor was there any tendency to be thrown to either the right or left side of the seat."

Other members of the crew experienced strong acceleration forces which made it difficult for them to move about in the airplane during the spin. Lieut. Ragsdale states:

"I was lying on the forward gunner's platform reading the Handbook of Instructions when the airplane snap-rolled to the left. Having been thrown into the Bomber's control panel and down on the floor with great force, I immediately operated the bomb-bay door lever to 'open' and put on my parachute, which was on the floor. I crawled back to the emergency door which I found difficult to open. Private Shealey pulled the emergency release and I pushed the door open. Shealey then bailed out. I did not get out, as the airplane was recovering from the spin. My right hand was slightly cut while opening the door."

Hind sight is better than fore sight, but it is through the study of accidents or near accidents in which the participants live to tell their stories that we increase our knowledge of flying. In this case the airplane was so heavily loaded that for the high altitude and low airspeed, it was flying near a stall. A slight gust or possibly a little ice was sufficient to complete the stall, and the YB-17, which flies easily and as normally as any other airplane, responded by dropping off into a spin. The automatic pilot, not as yet designed to nose and rudder into a spin, did the best it could, which in this case, of course, merely accentuated the spin. The pilot's reactions left nothing to be desired. He immediately disconnected the automatic pilot, took manual control himself, and

through his skill in instrument flying, soon leveled off - not, however, until after 3,000 feet of altitude had been lost.

Most large airplanes, military and commercial, are nowadays equipped with automatic pilots, and their use on long flights and when on instruments is standard practice. They are a marvelous aid to air navigation. They assist in bombing. They perform with a high degree of reliability the functions for which they are designed. They are not now designed to pull an airplane out of a spin, but it is possible that some day some bright mind will invent an automatic pilot which can recover from a stall.

Lessons to be learned:

(1) Disconnect the automatic pilot and fly by hand:

a. In extremely turbulent air;
b. When wing de-icers are operating;
c. In climbs or straightaway flight near stalling speed;
d. When power output on one or more motors is below standard.

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AERIAL PASSENGER SERVICE ON SHOE STRING

A citizen of San Jose, Costa Rica, recently wrote a letter to the Chief of the Air Corps, the translation of which is as follows:

"At the suggestion of Captain A.C.Reed of the Navy Department of Aeronautics, to which I wrote before, to direct the present letter to yourself, I now write.

I desire to know if that department does not wish to sell one of its dirigibles which is not in service or which it is retiring from service in usable condition.

The Navy Department was not able to favor me in this matter, because they say they had very few of these ships. The Goodyear Company gave me the same reply. I have no money to make this negotiation, because I have available only $25 but sometimes that department might sell me one of its old dirigibles cheap and give me the opportunity to pay for it in installments.

It is possible that I may establish a passenger service in this country with this dirigible as a means of transportation. In this matter I believe I will do well."

The writer of the above letter adds that it is his understanding that some few years ago the War Department sold a large semi-rigid dirigible for a small sum and wants to know if that airship was in usable condition.

Ed. Note: It was not. The only thing of value on this dirigible was the aluminum keel, and this could only be sold as junk.

A PERFECT FORCED LANDING - ALMOST.

It seems that in flying the pilot gets a tough "break" now and then just after everything looks "rosy" for getting safely out of a mess. A Reserve officer down in Panama, confronted with a forced landing when the engine went dead while flying over a jungle, appeared in a fair way to escape from his predicament with flying colors when a pesky telephone guy wire "gummed up the works."

While blithely doing acrobatics at 4,000 feet and recovering from a slow roll, Lieut. R.T. Black, Air Reserve, in a P-12E, found his engine had cut out completely. Thinking very little about it, as it is an old habit for P-12's to do just that after inverted flight, he started gliding down, expecting the engine to pick up any minute.

For 3,000 feet he tried everything in the book to get the engine started, but to no avail, and a quick glance for a field revealed nothing but jungle, and his only possible landing spot was the National Highway. Getting a straight shot at the highway, he squeezed down between 150-foot trees which lined the road on either side, but just as he was about to ease it onto the concrete the right wing cut through a telephone guy wire, throwing the ship around enough to wipe off the landing gear upon landing.

The airplane then skidded along on its belly for about 75 feet, coming to a stop just off the edge of the road, with no injury to Lieut. Black and the plane damaged to such an extent as to require an overhaul.

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New Scientific Knowledge of the Sun
(Continued from Page 6).

getting high enough to photograph the spectacular course of the moon's shadow as it raced along the earth and cloud tops.

His observations were made near Lima, Peru, in a Pan American Grace Airways plane, piloted by Captain Charles Disher and co-pilot W.E. Gray. Assisting in the difficult task of conducting accurate photography at an altitude where man commonly becomes unconscious or overpowered by lassitude, was W.O. Runcie, a photographer, of Lima.

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The regular Control Area Supply and Engineering Conference and Luncheon, held quarterly at the San Antonio Air Depot, Duncan Field, Texas, took place on August 3rd, and was attended by about fourteen officers from the various Air Corps stations in the Control Area, in addition to the officers of the San Antonio Air Depot.

THE BLUE AND GOLD CLUB OF LUKE FIELD
By Lloyd D. Miller

The Blue and Gold Club of Luke Field, T.H., which has given the soldiers of that station the equivalent of a university extension lecture course for the past year and a half, sponsored its last program for the summer on July 25th. It will reopen in the fall, on September 19th, with election of officers, and a suitable guest speaker will be selected for the occasion.

With regard to the professional and cultural activities of the Club, Lieut. Colonel Milton E. Beebe, Chaplain at Luke Field, stated that he had never known any university lecture course that had offered such a wide scope of subjects under such impressive and outstanding speakers.

The Army, the Navy, the University of Hawaii, the Honolulu Art Academy and the leading professional men of Honolulu all contributed to the splendid program of the Air Corps society.

Mr. Walter R. Coombs, Dean of Scottish Rite Masons in Hawaii, delivered on July 25th a masterful interpretation of the extent of Masonic work in Hawaii and on the mainland. With impressive speech, he expanded the beautiful background of Scottish Rite Masonry.

On July 18th, Brigadier General Barton K. Yount, Commanding General of the 18th Composite Wing, dwelt on his experience as military attache to the U.S. Embassy in Paris at the time of Colonel Lindberg's solo flight across the Atlantic. This talk also emphasized the growth of professional pride in the Air Corps by one of its outstanding leaders.

The religious development of the Club had an outlet in the appearance of Lieut. Colonel C.J. Bell, of the Salvation Army, with his Girls Band of 25 pieces. Prayer, religious talks of Colonel Bell, songs of worship and a band program provided an evening of worthwhile enjoyment to over 150 soldiers of the field.

Another notable program was one where Mr. J.M. Whitenack, of Honolulu, kamaaina sportsman, who is a lecturer of potent humor, flashed on the screen the best original colored slides of royal funerals of Hawaiian monarchs and of inaccessible craters and trails of the eight islands that have ever been produced.

A purely cultural lecture, which stressed the beauty of Oriental Art, was given by Miss Alyce Hoogs, instructor in that subject at the Honolulu Art Academy. She illustrated her talk with many fine pictures of both Chinese and Japanese art and interested many of the military personnel in a subject which had never been understood or appreciated before her informative remarks.

Mr. E.H. Bryan, Curator of the Bishop Museum, covered the wanderings of the Polynesians in an ethnological lecture: "Whence the Polynesian?" In his descriptions of the Polynesians, he showed the reactions of personal visits to most of these islands and interested the soldier in the South Seas and their original colonizers.

Chief Blaisdell, of the Honolulu Fire Department, dispatched five of his troubadors on an eventful Sunday evening, in which Hawaiian songs and string music entertained the Army flyers. These native Hawaiians almost coax their old Kahunas (witch doctor's enchantment) out of their steel guitars at times.

Warden Luckie, formerly a Lieut. Colonel of the Medical Corps, U.S. Army, spoke of the present treatment of prisoners and their development in Oahu Territorial Prison of which he is the head. When it is known that the value of the agricultural products ran over $20,000 last year, it can be said that Warden Luckie has in Oahu Prison an institution which is producing.

Chaplain Milton O. Beebe, who has acted as critic of the Blue and Gold Club, sails for the mainland on September 10th, next. His probable successor, Chaplain Albert F. Vaughan, it is believed will lead the Blue and Gold in its coming activities. Lloyd D. Miller, who has worked with Chaplain Beebe as Chairman of the Program Committee of the Blue and Gold Club, will assist Chaplain Vaughn for a few months before his return to the mainland.

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P-26A's IN THE PHILIPPINES

Touching on the receipt of a consignment of new (to them) P-26A airplanes, the News Letter Correspondent of Clark Field, P.I., states that the 3rd Pursuit Squadron is now speedily surveying its P-12B's, C's and D's, and adds:

"In a former News Letter the Correspondent pessimistically predicted that the P-26A would limit our small and strange field operations, but after two months' experience we find that we can operate without difficulty in all except a few of the unimportant fields. The Philippine Bureau of Aeronautics, under the able guidance of Major Harvey Prosser, has done wonders in clearing good fields in even the most remote sections of the Southern Islands. Captain Van Meter, 1st Lieuts. W.M. Canterbury and R.A.Legg have just returned from a five-day Southern Island flight and report that the P-26A is admirably suited for the Southern Island flights.

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Regular contributions to the columns of the News Letter from Wheeler, Chanute, Nichols and Patterson Fields would be greatly appreciated, as well as from the various Air Corps National Guard and Reserve organizations.

WHAT TO DO WITH OLD AIRPLANES

In a recent issue of the aeronautical magazine, THE AEROPLANE, London, Eng., "Babs" writes very entertainingly on the subject of finding some happy solution to the problem of providing a proper place for airplanes which have outlived their usefulness in military and commercial aviation. His dissertation is as follows:

"My Dears,-

The other day I was at a certain airport, and I got talking to a dear old air-liner who had just come in. I thought she was looking rather the worse for wear, so I asked her if she found her work too much of a strain.

"Well," she said, "I won't deny that I do sometimes feel a bit worn out. My pilot and the mechanics are very kind to me, but it's no good - I'm not so young as I was."

"Couldn't you retire?" I asked. "After so many years of faithful service, I'm sure your company would want you to have a happy old age."

"I wish I could," she replied, with tears in her eyes. "But where could I go to? No, Babs, there isn't any rest for old aeroplanes till the day they're broken up. So I shall just have to carry on somehow as long as I've got my C. of A."

I did wish I could help her....and then it occurred to me that she isn't the only old aeroplane who is having a bad time. All over the country there must be hundreds of others, civil and military types, who ought to have given up service long ago, but who haven't been able to, partly because they've not been replaced, and partly because there's simply nowhere for them to go.

Then suddenly I had an idea. How wonderful it would be, wouldn't it?, if there were an aerodrome specially for old aircraft....a happy home where they could enjoy their obsolescence away from the turmoil of modern airports and R.A.F. stations!

I was so thrilled with the idea that I dashed off to consult two Air Force friends of mine - a Bomber and a Fighter.

At first they were rather sceptical.- "It would be all very well for civil types," said the Bomber, "but peace and quiet isn't my idea of a happy old age. I'd far prefer to go to Spain and have a real fling."

The Fighter burst out laughing.- "Yes, I know you would!" she said. "I hear you've been practising the Right Wing salute in case you get the chance to go. But actually I quite agree with you. We get enough hanging about when we're young in the Air Force.

"I'd love to fire away at some wicked B--------s. It seems to me only editors can do that in this country. All the same, I think Bab's aerodrome would be splendid for old air-liners and trainers and light aeroplanes; but it would be better not to admit old military types at all. At least I know that civil types don't get on at all well in the same works as military aeroplanes."

"What about balloons and airships?" asked the Bomber.

"Oh, they would never fit in either," went on the Fighter. "I know! You ought to put up a notice at the gate, 'No Hawkers, No Circulars.'"

"It would be nice to have a lake for old seaplanes and flying boats," I said. "I wonder if we could arrange to take over Gatwick."

"If elderly aeroplanes are to feel really at home," said the Bomber, the hangars oughtn't to be too modern. None of this newfangled concrete and chromium. My first hangar was made of yellow brick and corrugated iron. And oh! it was such a homely old place."

"What would the aeroplanes do all the day?" enquired the Fighter. "They'd be miserable if they had nothing to do."

"There would be plenty for them to do!" I said triumphantly, "that's one of the chief points of the scheme. They would serve the sacred cause of Publicity - giving free flights to the Dear Big British Public.

"There are masses of people who haven't ever flown, and who would soon become air-minded if they got the chance to go up free. I wouldn't worry them if the aeroplanes were old - they'd be far too thrilled at getting off the ground. It would be a really practical and useful form of publicity."

The Bomber looked rather suspicious.- "But would the old aeroplanes be safe?" she asked. "It wouldn't be good publicity if they went crashing about all over the place."

"They'd be safe all right," I told her. "You see, they would be well looked after on the ground, and as a rule they would only go on very short flights. Besides, if they did go further afield they'd always be given enough petrol to get them back to the aerodrome."

"That would be a nice change for some of the air-liners!" said the Fighter.

"Isn't it all going to cost rather a lot?" asked the Bomber.

"I've figured it out," I replied. "There would be the cost of the aerodrome compensations to the owners of the aeroplanes and the running expenses. It needn't come to so very much; and, anyway, nobody would notice an extra naught on the end of the Air Estimates."

"The only thing I'm worried about," I continued, "is how to get the Air Ministry to take up the idea."

"That's easy!" exclaimed the Fighter. "You've only got to mention the scheme in THE AEROPLANE and it's as good as

adopted. There was a man from the Air Ministry down here last week, and he told my pilot that Lord Swinton always has his brainwaves on Fridays."

"I must say I'm glad I'm not Lord Swinton," said the Bomber. " think his job sounds most uncomfortable. I've heard that he's tied down with red tape and absolutely wrapped up in White Papers."

"Yes, I know - " the Fighter exclaimed. "And how can one expect a quick Expansion in those conditions!"

"I'm afraid I must go now," I said. "There are several aeroplanes waiting at the office to see me. But thank you both very much for your helpful advice. I shall launch my idea in THE AEROPLANE and await results."

"Good-bye!" they both called after me. "And good luck to the scheme!"

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SCHOOL OF AVIATION ORDNANCE TO BE STARTED

Spectators at the public bombing and gunnery exhibitions of the GHQ Air Force which are held occasionally at Plum Tree Island, Va., and Muroc Dry Lake, Calif., are always thrilled by the downward drop of the death missles and the curving trajectories of the machine gun tracer bullets. They respond with enthusiasm to the detonations and dust clouds that follow each bombing salvo.

But how many of them realize the amount of patience, skill and back-breaking labor that go, without a murmur, into the loading, fuzing and delivery of the blunt nosed death messengers?

All of the preliminary work at the six air bases of the General Headquarters Air Force, except the actual loading of the bombs into the airplanes, is performed by the six platoons of the Tenth Ordnance Service Company, commanded by Lieut. Colonel Russell L. Maxwell, Ordnance Department. The headquarters and the First Platoon of the company is stationed at Langley Field, Va.

To further the training of these Ordnance enlisted men, the School of Ordnance Aviation has been established at Langley Field. The object of the School will be to give initial training intheir assigned duties to the enlisted men of the six GHQ Air Force Ordnance platoons.

This is a special project of the Tenth Company, organized last January by the War Department on the recommendation of Major General Frank M. Andrews, the commander of the GHQ Air Force. Colonel Maxwell has selected Captain Edward P. Mechling, Ordnance Department, as the school director.

Enlisted men will come to Langley Field by air from all over the GHQ Air Force to study under the guidance of some of the outstanding Ordnance specialists on the Atlantic coast. One student each will come from March and Hamilton Fields, Calif.; Selfridge Field, Mich., Mitchel Field, N.Y., and Barksdale Field, La., and four from Langley Field.

Three sessions will be held in the 1937-1938 school year, with classes beginning in October, January and March. An entirely new group will comprise each class. There will be no school in December. The final course will be completed in April to enable the Tenth Ordnance Company to be 100% available for the spring exercises of GHQ Air Force units.

Captain Mechling comes here from the directorship of the Automotive and Military Departments of the Ordnance Field Service School, Raritan Arsenal, N.J. He states that the Aviation Ordnance students will have a very intensive scholastic schedule, compressed as it is in two months. Nearly eight hours a day will be spent in the class room.

Work will not be limited to the classroom. Every Ordnance facility of Langley Field, the largest air base in the Army, will be at the disposal of the students. Langley Field has a well equipped Ordnance warehouse.

The only subjects taught will be those dealing directly with Aviation Ordnance. These will include theoretical and practical training in the storage of bombs, fuzes, pyrotechnics, small arms, ammunition and machine guns. Subjects of principal interest will be small arms and ammunition.

In addition to Captain Mechling, the faculty will include Mr. Thomas Gaines, of Langley Field, instruction in ammunition inspection and storage and surveillance; Technical Sergeant Robert Tokely, formerly of Raritan Arsenal, N.J., who will teach "Ammunition, General." at the Langley Field School and Staff Sergeant George Arnold, the instructor in "Small Arms."

Implements of warfare that will be taught at Langley Field next autumn are the .30 caliber rifle, the .45 caliber automatic pistol, pyrotechnic projectors, Browning aircraft machine guns of the .30 and .50 caliber types, Browning machine gun for ground service of the .30 caliber type, the Winchester and Remington shotguns and the .22 caliber rifle.

Explosives and ammunition used in the military service will form an interesting part of the curriculum. This will embrace small arms, trench mortars, aircraft bombs and artillery ammunition in the introductory phase of the sub-course.

In low explosives the group will delve into smokeless, rifle, black and ballis-

tite powders. TNT or trinitrotoulene is one of the many high explosives the students will handle gingerly during their studies. Even blank ammunition, the variety used on national holidays and to salute living and deceased officials, will come under the scrutiny of the Ordnance men.

Forced down airplanes use signal pistols to call for help. Flares are used in night landings in isolated regions. The study of this subject is known as pyrotechnics.

Other subjects concerning which instruction will be given at Langley Field are General Storage, Chemical Bombs, Surveillance, Transportation, Issues of Property, Accounting for Property and Storage and the Issue of Ammunition.

It is expected that this experiment in military education will be watched with interest by Major General W.H.Tschappat, Chief of the Ordnance Department of the Army.

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FLIGHT FROM PANAMA TO RANDOLPH FIELD

Air Corps officers and enlisted men from Albrook Field, Panama Canal Zone, under the command of Lieut. Colonel B.G. Weir, recently made an extended flight to Randolph Field, Texas. Pilots of the planes were Major W.N. Reid, Captain Charles T. Myers, Lieuts. William C. Dolan, D.F. Callahan, Max H. Warren and Technical Sergeant Paul D. Jackson.

"Encountering excellent weather and slight tail winds, the flight made good time to Managua, Nicaragua, where we landed to refuel," says the News Letter Correspondent. "Dame fortune continued to smile as our reports indicated excellent weather to Guatemala City, where we landed about 3:30 p.m. Friday afternoon, having put ourselves 1,000 miles nearer our goal, Randolph Field. The next morning bright and early we were off for our long hop to Vera Cruz, Mexico. The pass crossing Mexico's narrowest point at Minatitlan being closed forced us to go over the top, but once reaching the Atlantic coast we again hit fair weather, and four hours and a half after leaving Guatemala we landed at Vera Cruz. It was here that our plans hit the first snag and our hopes of reaching Ramdolph Field that day were rudely interrupted. While taxying out to the end of the runway, the first ship to take off hit some very soft ground and managed to get stuck up to the hub. After two hours of using every theory advanced (many in number) we succeeded in getting the ship first out of one hole into another until we were finally on firm ground. Our problem then was to get off the other runway which not only being short was about 45° cross wind. Throwing out lift by the handful all ships got off OK, and we were on the way to Brownsville, where we landed two hours later, and after clearing the customs we were off for the hotel and bed. The next day being Sunday, and the trip being short, we decided to make a rather late take-off, and twelve noon found us at Randolph Field, the end of our journey."

It was at this point that the only mishap of the entire round trip flight occurred. Lieut. Jack Price, flying a Bombing plane, was just preparing to return to Randolph Field after a short flight when both motors cut out without warning at 600 feet. Not having much choice he headed for the first available field and, had it not been for a row of mesquite trees, he would have gotten away with a perfect forced landing. As it was, the ship went through a fairly large mesquite. The damage to the ship, however, was slight, and it was flown out several days later.

After a ten day stay at Randolph Field, the problem was to obtain authority from the Mexican Government to enter Mexico, and with four days of being on alert authority was finally obtained, and on July 3rd the airmen took off for Brownsville. Immediately after arriving there, bad weather set in which forced them to remain in Brownsville over July 4th, finally taking off the next morning for Tampico, Mexico. Arriving at Tampico, it was raining slightly but increasing every minute, and a heavy storm was moving in fast. Two ships succeeded in landing, but as Lieut. Scott was coming in the deluge occurred and he had nothing to do but fly blind until he found a lighter spot in the rain. All of the ships, however, got in safely.

The following day, July 6th, saw the longest single hop from Tampico to Tapachula, Mexico. The flight took five hours to reach destination and, except for having to go over the top again when crossing the Isthmus at Minatitlan, the weather was fairly good. After clearing customs, the flight headed for Guatemala City. As it entered the pass about 30 miles from Guatemala City, the weather was closing in fast and raining lightly. So quickly did it close in that several planes had to return to Tapachula for the night. Having flown 6½ hours and serviced planes for three more, the airmen were a tired lot, and everyone was off to bed early.

July 7th beamed bright and clear, which was, indeed, a pleasant outlook for the long 1,000-mile jaunt ahead. After receiving weather reports, the airmen were in for another pleasant surprise, as the weather was perfect all the way to Albrook Field. Two and one-half hours after leaving Guatemala, landing was made at Managua, where the flight was

joined by the planes which had returned from Tapachula.

On this leg the flying was at an altitude of 10,000 feet, in order to gain advantage of the winds aloft, and at this altitude one pilot, Lieut. Cy Kitchens, found his motor losing RPM's rapidly. Apparently the trouble was ice in the carburetor, but even putting his air heat control in the hot position the engine continued to lose RPM's until it had completely cut out. He was making for the nearest emergency field when at about 4,000 feet his motor slowly started, picking up until it was again functioning normally.

"Even though the surface winds were directly on our nose," says the News Letter Correspondent, "we climbed to 14,000 feet, where we had a light tail wind, enabling us to make Albrook Field in 3 hours, 40 minutes, for an average of just under 180 m.p.h. Some of we thin-blooded boys were nearly frozen stiff when he landed at Albrook, but we were all happy to be back after having been gone for twenty days."

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LIEUT. DENSFORD BRINGS HOME MORE TROPHIES

Firing in the Texas State Championship Pistol Matches at Laredo, Texas, July 17th and 18th, Lieut. Charles F. Densford- ace pistol shot of the Air Corps - was forced to be content with second place for the second time since his return to duty in Texas. His aggregate score for the championship was 1097, which was bettered by 5 points by Captain Charles Askins, of the U.S. Immigration Border Patrol, El Paso.

Captain Askins won the State Championship in 1936. However, Lieut. Densford brought home three new trophies and seven medals to add to his collection. The trophies included the Fort Worth Trophy, the L.L. Cline Trophy for rapid fire aggregate, and the Bettencourt Trophy for a rapid fire match. In this last match, Lieut. Densford tied the world's record - 195 out of 200.

Lieut. Densford does not plan to enter the National Matches this year, since there is no team from Kelly Field, and he is not eligible to compete on any other team.

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PERSONNEL CHANGES AT ADVANCED FLYING SCHOOL

Major Arthur G. Liggett has been relieved from command of the 63rd School Squadron and assigned to duty as Director of Ground School, Kelly Field, effective August 1, 1937. Captain Harvey F. Dyer now commands the 63rd, assisted by Lieut. Robin B. Epler, a recent arrival from the Panama Canal Department.

BOMBING TRAINING AT LANGLEY FIELD

The 1st Bombardment Squadron, stationed at Mitchel Field and commanded by Major Claude Duncan, and the 31st Bombardment Squadron, from Hamilton Field, Calif., and commanded by Major James Taylor, recently returned to their home stations after a week of intensive bombing training at Langley Field on stationary and moving targets.

The officers of the 31st Bombardment Squadron were ferried to Langley Field by transport planes. They were furnished enlisted crews and airplanes by the 2nd Bombardment Group. The planes were maintained and serviced with 20th Bombardment Squadron facilities.

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CADET HANDLES SITUATION LIKE VETERAN

Flying Cadet Charles W. Bicking, of the 21st Reconnaissance Squadron, Langley Field, Va., piloting a B-10B Bombing plane one morning recently, found that he was unable to extend one leg of the landing gear when he was making preparations for a landing. As a result, he and his companions, Sergeant Brewer, Private 1st Cl. Sprecher and Private Weyer found themselves in a rather uncomfortable situation. Radio communication was apparently cut off by the same trouble which placed the landing gear out of commission.

Upon learning of the condition of the plane in flight, the Commanding Officer of the 2nd Bombardment Group sent an A-17 airplane into the air and instructions were communicated to Cadet Bicking to proceed to the Middletown Air Depot for a landing. At that station the landing was made without the use of the landing gear.

The News Letter Correspondent states that much credit is due Cadet Bicking for the success of the landing and his coolness in handling a dangerous situation.

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NO MITCHEL TROPHY RACE THIS YEAR

Army Air Corps officials at Selfridge Field, Mich., recently announced that "circumstances have made it advisable" to cancel all plans to hold the annual Mitchel Trophy Race this year. Although plans for holding the event on September 18th were already well under way, Major Edwin J. House, commanding the 1st Pursuit Group, GHQ Air Force, ordered all preparations stopped. He stated he regretted very deeply that there will be no race this year, but that visitors to Selfridge Field who are interested in the training of the First Pursuit Group pilots would be most welcome at any time.

B I O G R A P H I E S

LIEUT. COLONEL WILLIAM E. KEPNER

Colonel Kepner's career as an officer in the U.S. Army has been a very colorful one. This fact would be evident even to a most casual observer were Col. Kepner to take the trouble to display the various decorations, certificates, etc., in his possession. The decorations include the Distinguished Service Cross, the Distinguished Flying Cross, French Legion of Honor, Croix de Guerre with palm. In further recognition for his exceptional service in the World War, he received a citation from both the American Army and the French Army.

Colonel Kepner possesses four Air Corps flying ratings, namely, Airplane Pilot, Airship Pilot, Airplane Observer and Balloon Observer. He is a member of the mythical Caterpillar Club. He has piloted the two Navy rigid airships SHENANDOAH and LOS ANGELES and received part of his airship training on the ill-fated airship ROMA. For a number of years he has piloted the various types of semi-rigid airships of the Army Air Corps and participated in many extended cross-country flights therein. He participated in several National Elimination Balloon Races, three International Balloon Racesand in the first Stratoshpere Balloon Flight in this country. He served as safety pilot in the first successful flight of an airplane across the American continent where the pilot, Major Ira C. Eaker, Air Corps, flew solely by instruments and with no outside vision.

Born in Miami, Indiana, January 6,1893, Colonel Kepner enlisted in the U.S. Marine Corps in November, 1909, and was discharged four years later with a "Good Conduct Medal" as a reward. When National Guard regiments were Federalized for service on the Mexican Border, he was,on June 26, 1916, commissioned a second lieutenant, 2nd Infantry, Indiana National Guard. He was promoted to 1st Lieutenant on November 9, 1916. He was appointed a second lieutenant of Cavalry in the Regular Army on June 14, 1917, and promoted to 1st Lieutenant on the same date.

Transferred to the 4th Infantry on September 11, 1917, he served with his regiment in France in the Aisne Offensive, Champaign-Marne Defensive, Aisne-Marne Offensive, Chateau-Thierry Sector, St. Mihiel Offensive and the Meuse-Argonne Offensive. On October 5-6, 1918, near Cunel, France, while in command of a battalion, Colonel Kepner personally led one company of his command in an attack on a woods occupied by a company of German machine gunners. He was the first man to enter the woods and later, when part of the attacking company was held up by flanking machine-gun fire, he with a patrol of three men encircled this machine gun, and after a hand to hand fight put the gun out of action.

After the Armistice, Colonel Kepner served as Operations Officer, 4th Infantry, at Plaidt, Germany, for six months, and as Executive Officer, Headquarters troops, Coblenz, Germany, for five months.

Colonel Kepner started his career in the Air Corps in October, 1920, when he was detailed as a student to take lighter-than-air training at the Army Balloon School at Ross Field, Arcadia, Calif. He graduated therefrom on April 25, 1921, and was rated a Balloon Observer, May 9, 1921.

After commanding the 1st Balloon Company at Ross Field from April 26 to May 12, 1921, he was transferred to Camp Benning, Ga., where he commanded the 32nd Balloon Company from June 7th until the following November, when this Balloon Company was placed on inactive status. He was then transferred to Langley Field, Va., where he commanded the Airship School Detachment and was a student at the Airship School until the completion of his airship training in June, 1922. He was rated as "Airship Pilot" on June 22nd.

Transferred to Aberdeen Proving Ground, Md., Colonel Kepner commanded the 18th Airship Company until March, 1923, and performed the additional duty as Commanding Officer of Air Corps troops at that station to November 15, 1922. During the night of July 27-28, 1922, he made a cross country flight to New York City and return in the Airship C-2.

On March 5, 1923, Colonel Kepner reported at the Naval Airship Station at Lakehurst, N.J., for duty as student to pursue the rigid airship course. During the course of this training he participated in flights aboard the airships SHENANDOAH and LOS ANGELES. In addition, he pursued the regular navigation course, and he served as assistant navigator on the airship LOS ANGELES on two flights to the Island of Bermuda. In all, he completed 340 hours of flying on rigid sirships.

In August, 1925, upon the completion of his ground, flying and navigation instruction at the Lakehurst Naval Air Station, Colonel Kepner was transferred to Brooks Field, Texas.

He was stationed at that field until March 31, 1926, and was then transferred to Scott Field, Belleville, Ill., where he was Post Exchange Officer to August 4, 1926; Commanding Officer of the 9th Airship Company, in addition to various other duties, to July 18, 1927;

and thereafter, until November 1, 1928, Assistant Commandant of the Balloon and Airship School and Executive Officer of Scott Field. During the maneuvers in Texas in 1927, he was a member of two airship crews, and during the summers of 1927 and 1928 he was test pilot and commander of the Air Corps semi-rigid airship RS-1.

In the National Elimination Balloon Race in 1927, which started from Akron, Ohio, Colonel Kepner, with Lieut. Wm. O. Eareckson as his aide, finished in third place among a field of 15 contestants and traveling a distance given officially as 595 miles, landing at Biddeford, Maine. Entitled to represent the United States in the Gordon-Bennett International Balloon Race, held September 10, 1927, at Detroit, Mich., the Army team of Kepner and Eareckson finished tenth in a field of 15 contestants. Better times, however, were ahead of these two aeronauts in the following year, for in the National Elimination Balloon Race, which started from Pittsburgh, Pa., on May 30th, Army Entry No.1, which they piloted, finished in first place, which again entitled them to represent the United States in the Gordon-Bennett International Balloon Race, held at Detroit, Mich., on June 30th. In competition with eleven other entrants, they finished in first place, covering a distance of 460.9 miles and landing near Kenbridge, Va.

Starting on November 3, 1928, Colonel Kepner pursued the special course in Airplane Observation at the Advance Flying School at Kelly Field, Texas, and graduated on February 28, 1929. He was then assigned to duty at the Materiel Division, Wright Field, Dayton, Ohio, as Chief of the Lighter-than-Air Branch of the Experimental Engineering Section.

Colonel Kepner, for the third consecutive year, was a contestant in the International Balloon Race, which started from St. Louis, Mo., September 28, 1929. With Captain James F. Powell as his aide, he missed being a winner for the second time by a matter of three miles and finished in second place.

Relieved from duty at Wright Field on May 19, 1930, Colonel Kepner was on detached service at Lakehurst, N.J., and at Langley Field, Va., with the 19th Airship Company until August 21, 1930, and was then assigned to station at March Field, Riverside, Calif., where he was a student at the Primary Flying School and commanded the 9th Bombardment Squadron. Upon the completion of his primary flying training, October 20, 1931, he was transferred to Kelly Field, Texas, for advanced training, which he completed on February 26, 1932, on which date he was rated as "Airplane Pilot." He then was again assigned to Wright Field, Ohio, this time for duty in the Procurement Section of the Materiel Division. In June, 1932, he was appointed Chief of the Purchase Branch of the Materiel Division, and he occupied this position until August, 1935.

In the Gordon-Bennett International Balloon Race, which was held at Chicago in September, 1933, Colonel Kepner served as Chief of Operations on the Contest Committee.

For a period of two months during the summer of 1934, he was on detached service at Rapid City, S.D., in connection with the National Geographic Society-Army Air Corps Stratosphere Flight. On July 28th of that year, accompanied by Captains Albert W. Stevens and Orvil A. Anderson, he reached an altitude of 60,613 feet in the stratosphere balloon, when a tear in the balloon fabric necessitated a descent. After the balloon virtually parachuted down to an altitude somewhat below 4,000 feet, it was considered that the rate of descent was too rapid for the personal safety of the aeronauts, and they jumped from the gondola with their parachutes. This daring venture into the regions of the upper air was considered such an extraordinary achievement that all three of these Air Corps officers were awarded the Distinguished Flying Cross.

From August, 1935, to June, 1936, Colonel Kepner was a student at the Air Corps Tactical School at Maxwell Field, Ala., and, following his graduation, he was a student for another year at the Command and General Staff School at Fort Leavenworth, Kansas, from which he graduated in June, 1937. He is now under orders for duty with the GHQ Air Force at Langley Field, Va.

From June 3 to 7, 1936, Colonel Kepner participated in a novel flight across the American continent from Mitchel Field N.Y., to Los Angeles, Calif. Piloting a P-12 Pursuit plane, he escorted Major Ira C. Eaker, Air Corps, who also piloted a P-12 but who, on the trip of 2600 miles of airway, relied solely on the instruments in the plane, without any outside vision, to guide him to his destination. By easy stages, owing to the limited gasoline supply of the small Pursuit planes, the two officers completed the long trip without incident, Major Eaker seated in the hooded cockpit of his plane and Colonel Kepner serving as a convoy to avert any mishaps. There were several times when the escort plane was forced to stay behind the "blind" ship, because of poor visibility, thus placing reliance on the "blind" ship to lead the way.

Colonel Kepner received his promotion to Captain on July 1, 1920; to Major, October 1, 1930, and to Lieut. Colonel (temp.) on June 16, 1936.

LIEUT. COLONEL WILLIAM C. OCKER

Lieut. Colonel William C. Ocker, one of the oldest pilots in point of service in the Army Air Corps, and who was considered one of its most expert fliers, was born in Philadelphia, Pa., June 18, 1876, and was educated in the public schools of that city. Entering the military service, June 25, 1898, he served in the Spanish-American War and the Philippine Insurrection.

Up to January 31, 1899, he was with Battery G, 1st Artillery. Thereafter, and until September, 1912, he was a Cavalryman, serving an enlistment each with Troop L, 5th Cavalry; Troop C, 2nd Cavalry; Troop G, 13th Cavalry, and Troop M, 7th Cavalry.

When he reenlisted on September 24, 1912, he cast his lot with the Signal Corps, joined the Aviation Section of that branch of the service, and has been connected with Army aviation ever since. During his enlisted service with the Aviation Section, Signal Corps, he held successively the grades of Corporal, Sergeant, and Sergeant, 1st Class.

It was not long before he became an expert aviation mechanician as well as a proficient pilot of many different types of airplanes. He qualified for a pilot's license of the Aero Club of America in the year 1914, while holding the grade of Corporal, under circumstances which were quite interesting. During the time the Signal Corps Aviation School was in operation at North Island, San Diego, Calif., it occupied one end of the flying field thereat, while a flying school operated by the Curtiss Company was located at the other end. Colonel Ocker was such a devoted aviation enthusiast that, after he finished his day's work at the Signal Corps Aviation School, he was wont to repair to the other end of North Island to make himself as useful as possible at the Curtiss School in his capacity as aviation mechanic. So appreciative were the authorities of that School of the valuable assistance he rendered that one of their flying instructors, Mr. T.C. Macaulay, a pioneer aviator, who served as a Major in the Air Service during the World War, undertook to teach him to fly. Colonel Ocker proved to be an apt pupil, indeed, and showed exceptional flying skill when he took the test for his pilot's license. During his stay at the San Diego Aviation School, he acted as instructor in charge of training and himself supervised the training of officers from the time they started flying until they completed their tests for the rating of Junior Military Aviator.

In 1916, Colonel Ocker came to Washington with a Glenn L. Martin tractor plane for the purpose of demonstrating the Macy stabilizer. The late Brigadier General William Mitchell, then a Major in the Signal Corps, verbally instructed Colonel Ocker (then a Sergeant) to fly over the site of what is now the old Bolling Field to report his opinion on the suitability thereof as a flying field for the Nation's Capital. This flight was made on December 16th of that year.

Shortly thereafter, on January 11, 1917, Colonel Ocker accepted a commission in the Aviation Section, Signal Corps Reserve. He was the first to receive a Reserve commission in that branch of the service and the first reserve officer to be called to active duty.

Aside from his skill as an airplane pilot, Colonel Ocker excelled as a rifle and pistol shot, and he has in his possession two gold medals for victories achieved at the National Rifle and Pistol Matches.

Colonel Ocker was probably one of the first pilots to become interested in the Turn Indicator. It is believed that he tested the original Turn Indicator for Dr. Elmer Sperry, the inventor, and when the Bank and Turn instrument was brought out, he was very much enthused over it. The original intent of these instruments was to improve technical flying ability by showing pilots when smooth turns and banks were being made.

It was after Colonel Ocker realized the fallibility of the human senses as a true barometer of the actions of an airplane in flight, when the vision of the pilot was cut off by fog or other weather conditions, that he set out to convince pilots that their "feel of the ship" was largely a myth. He designed a small box with a bank and turn indicator and other instruments for use in connection with a revolving chair. This training device proved without doubt that man-made instruments are more reliable than the human mechanism in flight.

It was during the year 1926 that Col. Ocker and Major David A. Myers, Medical Corps, Flight Surgeon, conducted certain experiments and research work which led to the introduction of instrument flying instruction at the Air Corps Training Center. It had been firmly established that individuals who were blind-folded, placed in a revolving chair and rotated for a few turns, invariably replied after the chair was gently stopped that they had started to turn in the opposite direction of prior motion. The tendency of an individual's senses to play him false in a situation of this kind is the result of induced vertigo.

Major Myers gave this induced vertigo test to Colonel Ocker to ascertain what the mental reactions of an old-time pilot would be when he discovered he could not tell whether he was turning or sitting still. Following the test, he disappeared without comment of any kind, but soon returned with a view box which he carried

in his hand. This was the box with the bank and turn indicator, previously mentioned. A very useful gadget in this view box was a flashlight bulb. The revolving chair test was repeated in all combinations of rotation, using the unlighted box to cut out the light and thus remove sight from the trinity of equilibrium senses.

There was the usual induced vertigo, with the usual inability to tell correctly which way his body was turning. The gyroscope was then started and the Bank and Turn Indicator put in action. The flashlight bulb was turned on and the tests repeated. This time every answer was correct as to direction of motion, stopping and starting. Even the confusion of reversals was absent. The sensations were felt the same as before, but by giving the answer shown by the pointer on the Bank and Turn Indicator instead of the answer prompted by his senses, it was found impossible to confuse him. This demonstration started the research into Blind Flying. It was immediately recognized that here was the answer to the inability of pilots to do blind flying without a visual reference to gravity.

By lighting the box, the equilibrium trinity of senses was restored to a coordinated action. Merely restoring sight to the equilibrium sense is not enough, however. There must be something within the pilot's range of vision that will act as a vertigo stopper and tell him what position his ship is in with relation to the earth; in other words, allow the pilot mentally to visualize "where is the ground." The hand on the Bank and Turn Indicator will accurately show motion in either direction, right or left, and will come to a dead center and remain there when there is no rotation.

Constant repetitions of demonstrations with the Ocker-Myers "Vertigo Stopper Box" finally convinced pilots that it was a real lie detector and that, on the ground at least, they could not tell which way they were turning if they could not see. Major Myers, with Colonel Ocker at the controls, spent some hours in the air as a "Blind Flying" observer, communicating by means of strings to indicate what Major Myers thought Colonel Ocker was doing from time to time.

Colonel Ocker also rigged up a covered cockpit ship, with one exposed control pilot seat, and spent many hours testing out the various reactions of himself and others. It was proven without a doubt that these reactions do take place in the air and in an intensified degree.

The value of the Ocker-Myers view box became generally recognized as the only means available of instructing pilots and prospective pilots while on the ground in the sensations they would experience and the reactions they would have if they attempted to do blind flying without an artificial horizon, which term means any instrument or combination of instruments that will quickly, easily and reliably give the pilot information that he may mentally visualize in terms of where is the ground.

Visualizing that it was imperative that every student at the Air Corps Training Center should have this instruction, Colonel Ocker originated the demonstration box and formulated a course of ground instruction in Blind Flying, which was adopted by the Air Corps as routine in May, 1934. In addition, a routine course in actual instrument flying follows the ground instruction.

In his various demonstrations and experiments in connection with "Blind" or instrument flying, Colonel Ocker had a most valuable ally in Lieut. Carl J. Crane, Air Corps, and they are the joint authors of the book published in 1932, under the title "Blind Flight in Theory and Practice."

For his invention of the blind flying training device and the assignment of his patent rights to the United States government, Colonel Ocker was awarded $1,000 by Congressional appropriation for the valuable service he rendered aviation in general and the Army Air Corps in particular.

Placed on active duty as a Captain in the Aviation Section, Signal Corps Reserve, on February 10, 1917, Colonel Ocker was assigned to station at Chandler Field, Essington, Pa., where he served as Commanding Officer from March 15th to April 13, 1917, and as Officer in Charge of flying instruction and the engineering division at that field until November 12, 1917. He was then transferred to Gerstner Field, Lake Charles, La., where he was in charge of flying instruction to May 4, 1918. From February 18, 1918, he was also in charge of the Pursuit School and the Gunnery School at Gerstner Field.

Transferred to Wilbur Wright Field, Ohio, he was on duty with the testing department of the technical section thereat until October 11, 1918. He was then assigned to the command of the 344th Handley-Page Service Squadron for overseas duty, but the Armistice was signed before his organization was finally prepared to sail.

Assigned to the Office of the Director of Air Service, Washington, D.C., Col. Ocker was on duty in the Training and Operations Group until March 11, 1920, when he was transferred to Langley Field, Va., where he served as Officer in Charge of Flying until the following September. At his next station, Bolling Field, D.C., he performed various duties and at different times was Commanding Officer of Headquarters Flight and Assistant Engineering Officer, Post En-

Engineering Officer, and Commanding Officer of the 56th Service Squadron until April 5, 1924.

Returning to the spot where for a number of years before the War he served as an enlisted man in the Aviation Section, Signal Corps - Rockwell Field, San Diego, Calif. - Colonel Ocker, in addition to performing various other duties, served as meteorological officer, signal officer, radio officer and information officer until January 2, 1926, when he was transferred to Crissy Field, Presidio of San Francisco, Calif. At this post, also, his duties were of a varied character, and at various times he commanded the post and the 91st Observation Squadron until July 16, 1929. He was then assigned to Brooks Field, Texas, where he commanded the 46th School Squadron until July, 1930.

Transferred to the Advanced Flying School, Kelly Field, Texas, Colonel Ocker served at various times as post inspector and post transportation officer, in addition to other duties, and at different times was in temporary command of the Advanced Flying School. He was transferred to Barksdale Field, La., on June 15, 1937.

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SOVIET FLYERS EXTEND THANKS TO AIR CORPS

The Soviet transpolar flyers, Colonel Gromov, Major Yumashev and Captain Danilin, who last month flew non-stop from Moscow, Russia, to San Jacinto, Calif., sent the following telegram to Major General Oscar Westover, Chief of the Air Corps, August 4, 1937, on the eve of their departure for their native land:

"On the day of our sailing home may we express to you General our sincere thanks to you and to the United States Army Air Corps for friendly and efficient assistance given us during and after our transpolar flight which greatly facilitated its success. We will be glad to reciprocate this friendliness to American fliers."

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NATIONAL GUARD SQUADRON CELEBRATES

The 115th Observation Squadron, California National Guard, celebrated its thirteenth birthday on July 11th with open house at the Griffith Park Airport, Los Angeles County. Interesting tactical flying demonstrations included dropping and picking up messages to and from the ground and formation flying. Flying, aerial photographic and communications equipment were open for public inspection.

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TEST FLIGHTS OF SUB-STRATOSPHERE PLANE

A recent announcement of Hon. Harry H. Woodring, Secretary of War, was to the effect that flight tests have begun at Wright Field, Dayton, Ohio, on the Army's new sub-stratosphere plane, the Lockheed XC-35. The plane, which successfully completed its transfer flight from Los Angeles, Calif., to Dayton, has passed its ground technical inspection and made its initial performance flights on August 5th.

Reports from Wright Field on the early flights indicate that the plane will be a satisfactory flying laboratory in which to accomplish the purpose of its purchase, namely, experiments on sealed, pressure cabins, high altitude apparatus, and air medical tests on human reactions in the sub-stratosphere.

The plane itself is not novel, save for its sealed, pressure cabin, supercharged engines and instruments. From an exterior view it is very similar to the Lockheed Electra now in use on several commercial airlines. Its principal experimental features are its cabin, which is designed and equipped to permit maintaining sea level pressures and oxygen content at high altitudes, and the many instruments it carries to facilitate physiological and psychological tests on personnel and technical tests of materiel in rarified atmospheres.

Aside from the military value expected from these tests, which are of prime importance now that planes are designed to fight at high altitudes, it is believed that the data procured should be of great importance to civil airlines, since the tests will go hand in hand with the experiments now being conducted commercially on "over-weather" flying.

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JAPANESE OFFICERS VISIT KELLY FIELD

Kelly Field received a visit recently from four Japanese Army officers and one civilian engineer who are now on a tour of flying fields in this country. The party, headed by Colonel J. Okada, included Major T. Kawashima, Major Tomojiro Honda, Captain K. Ikeda and Engineer W. Kubcyama.

The Japanese officers were particularly interested in American methods of periodic inspection of aircraft and engines. They also exhibited considerable interest in Kelly Field's new miniature range building, which had been completed a short time prior to their arrival. They were entertained during their 3-hour visit by Colonel E.A. Lohman, Assistant Commandant, and Major Isaiah Davies, Secretary of the Advanced Flying School, and were guests at luncheon at the Kelly Field Officers' Club.

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